AMENDMENTS TO THE CLAIMS

Claims 1-24 (canceled)

25. (Previously presented) A barcode recognition apparatus comprising:

preprocessing means for determining an edge portion of an input image and transforming the edge portion into a histogram of brightness;

binarization process means for binarizing the preprocessed input image;

labeling means for labeling the binarized input image;

barcode field extracting means for extracting a barcode field from the labeled input image; and

barcode recognizing means for recognizing a barcode from the extracted barcode field.

26. (Previously presented) The barcode recognition apparatus according to claim 25, wherein the binarization process means determines a threshold value in the binarization of the image on the basis of the input image transformed into the histogram.

27. (Previously presented) The barcode recognition apparatus according to claim 25, wherein the binarization process means employs a discriminant analysis method as a method for determining a threshold value in the binarization of an image.

28. (Previously presented) The barcode recognition apparatus according to claim 25, wherein the labeling means performs labeling by allocating individual numerical value names to each of patterns that are connected to the input image.

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29. (Previously presented) The barcode recognition apparatus according to claim 28, wherein the width of a bar is defined in the number of black pixels/the height in the vertical direction regarding the labels of the bar from the input image labeled by the labeling means.

30. (Withdrawn) A barcode recognition method comprising the steps of:

determining an edge portion of an input image and transforming only the edge portion into a histogram of brightness;

binarizing the preprocessed input image;

labeling the binarized input image;

extracting a barcode field from the labeled input image; and

recognizing a barcode from the extracted barcode field.

31. (Withdrawn) A program for enabling a computer to perform:

a preprocessing step for determining an edge portion of an input image and transforming only the edge portion into a histogram of brightness;

a binarization process step for binarizing the preprocessed input image;

a labeling step for labeling the binarized input image;

a barcode field extracting step for extracting a barcode field from the labeled input image; and

a barcode recognizing step for recognizing a barcode from the extracted barcode field.

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32. (Withdrawn) A recording medium readable via a computer, wherein the program according

to claim 31 is recorded.

33. (Currently amended) A barcode recognition apparatus comprising:

     preprocessing means for determining an edge portion of an input image photographed via

a camera and transforming the edge portion into a histogram of brightness;

     binarization process means for binarizing the preprocessed input image;

     labeling means for labeling the binarized input image;

     barcode field extracting means for extracting a barcode field from the labeled input

image; and

     barcode recognizing means for recognizing a barcode from the extracted barcode field,

wherein

     as a condition of an~~the~~ adjacency of bars in the barcode, a relative value with respect to

the widths of the bars is determined to be a threshold value.

34. (Previously presented) The barcode recognition apparatus according to claim 33, wherein

when the widths of the bars or spaces are collated, an allowable range is set in accordance with

the widths.

35. (Currently amended) The barcode recognition apparatus according to claim 33~~25~~, wherein

the barcode field extracting means extracts the adjacency relationship of the bars, determines a

left end and a right end of the bars in accordance with the adjacency relationship, and extracts a

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barcode field through the correspondence of the number of bars between the left end and the

right end of the bars to a certain value that has been prescribed.

36. (Previously presented) The barcode recognition apparatus according to claim 35, wherein the

adjacency relationship of the bars is determined to be adjacent when all of the conditions that

two bars share a scanning line, that the difference of the heights between the two bars is within a

certain range, and that the distance between the two bars is within a certain range, are satisfied,

and wherein, the range of the difference of the bar heights and the range of the distance of the

bars are obtained on the basis of relative values with respect to the height and the width of a bar

used as a criterion.

37. (Previously presented) The barcode recognition apparatus according to claim 35, wherein

barcode recognition employs the minimum width of the bars in the barcode filed as a unit width,

the barcode field being extracted via the barcode field extracting means, and wherein the barcode

recognition is performed by collating the arrangement of the pattern of the widths of bars and

spaces in the extracted barcode field, the widths being integral multiples of the unit width, with a

prescribed arrangement of the pattern of the widths of bars and spaces.

38. (Previously presented) The barcode recognition apparatus according to claim 37, wherein the

barcode recognition is repeated varying the unit width.

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39. (Withdrawn) A mobile phone comprising the barcode recognition apparatus according to claim 25.

40. (Withdrawn) A mobile phone comprising:

an antenna for transmitting and receiving radio waves;

a first control portion for controlling the transmission and reception of radio communication;

a key input portion;

a display portion;

a camera for inputting image information; and

a second control portion having a barcode recognition apparatus.

41. (Withdrawn) The mobile phone according to claim 40, wherein the barcode recognition apparatus comprises:

preprocessing means for determining an edge portion of an input image photographed via a camera and transforming only the edge portion into a histogram of brightness;

binarization process means for binarizing the preprocessed input image;

labeling means for labeling the binarized input image;

barcode field extracting means for extracting a barcode field from the labeled input image; and

barcode recognizing means for recognizing a barcode from the extracted barcode field.

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42. (Withdrawn) A barcode recognition method using the mobile phone according to claim 40,

comprising a step for displaying input image information on the display portion when the

barcode is photographed to be the input image via the camera.